WHAT IS CLAIMED IS:

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1. A method of manufacturing a semiconductor device comprising the steps of:

forming a conductive film over a semiconductor with an insulating film therebetween;

forming a resist pattern on the conductive film by using a photomask having a diffraction grating pattern or a reticle having a diffraction grating pattern, wherein a thickness of an edge portion of the resist pattern is smaller than a thickness of a middle portion of the resist pattern;

forming a gate electrode by etching using the resist pattern, wherein a thickness of an edge portion of the gate electrode is smaller than a thickness of a middle portion of the gate electrode;

introducing an impurity element into the semiconductor with the gate electrode as a mask to form a first impurity region and a second impurity region in the semiconductor, wherein the first impurity region is not overlapped with the gate electrode and the second impurity region is overlapped with the edge portion of the gate electrode.

2. A method of manufacturing a semiconductor device comprising the steps of:

forming a conductive film over a first semiconductor and a second semiconductor with an insulating film therebetween;

forming a rectangular shape first resist pattern on the conductive film over the first semiconductor, and forming a second resist pattern on the conductive film over the second semiconductor by using a photomask having a diffraction grating pattern or a reticle having a diffraction grating pattern, wherein a thickness of an edge portion of the second resist pattern is smaller than a thickness of a middle portion of the second resist pattern;

forming a rectangular shape first gate electrode over the first semiconductor by dry etching using the first resist pattern, and forming a second gate electrode by dry etching using the second resist pattern over the second semiconductor, wherein a thickness of an edge portion of the second gate electrode is smaller than a thickness of a middle portion of the second gate electrode;

introducing an impurity element into the first semiconductor with the first gate electrode as a mask to form a first impurity region in the first semiconductor, wherein the first impurity region is not overlapped with the first gate electrode, and introducing the impurity element into the second semiconductor with the second gate electrode as a mask to form a second and a third impurity regions in the second semiconductor, wherein the second impurity region is not overlapped with the second gate electrode and the third impurity region is overlapped with the edge portion of the second gate electrode.

3. A method of manufacturing a semiconductor device comprising the steps of:

forming a conductive film over a first semiconductor and a second semiconductor with an insulating film therebetween;

forming a rectangular shape first resist pattern on the conductive film over the first semiconductor, and forming a second resist pattern on the conductive film over the second semiconductor by using a photomask having a diffraction grating pattern or a reticle having a diffraction grating pattern, wherein a thickness of an edge portion of the second resist pattern is smaller than a thickness of a middle portion of the second resist pattern;

forming a rectangular shape first gate electrode over the first semiconductor by dry etching using the first resist pattern, and forming a second gate electrode by dry etching using the second resist pattern over the second semiconductor, wherein a thickness of an edge portion of the second gate electrode is smaller than a thickness of a

middle portion of the second gate electrode;

introducing an impurity element into the first semiconductor with the first gate electrode as a mask to form a first impurity region in the first semiconductor, wherein the first impurity region is not overlapped with the first gate electrode, and introducing the impurity element into the second semiconductor with the second gate electrode as a mask to form a second impurity region in the second semiconductor, wherein the second impurity region is not overlapped with the second gate electrode;

removing the first and the second resist patterns;

forming a third resist pattern covering the first gate electrode; and

introducing the impurity element into the first semiconductor with the third resist pattern as a mask to form a third impurity region in the first semiconductor, wherein the third impurity region is not overlapped with the third resist pattern and the first gate electrode, and introducing the impurity element into the second semiconductor with the second gate electrode as a mask to form a fourth and a fifth impurity regions in the second semiconductor, wherein the fourth impurity region is not overlapped with the second gate electrode and the fifth impurity region is overlapped with the edge portion of the second gate electrode.

4. A method of manufacturing a semiconductor device comprising the steps of:

forming a conductive film over a semiconductor with an insulating film therebetween;

forming a resist pattern on the conductive film by using a photomask having a translucent film portion or a reticle having a translucent film portion, wherein a thickness of an edge portion of the resist pattern is smaller than a thickness of a middle portion of the resist pattern;

forming a gate electrode by etching using the resist pattern, wherein a thickness of

an edge portion of the gate electrode is smaller than a thickness of a middle portion of the gate electrode;

introducing an impurity element into the semiconductor with the gate electrode as a mask to form a first impurity region and a second impurity region in the semiconductor, wherein the first impurity region is not overlapped with the gate electrode and the second impurity region is overlapped with the edge portion of the gate electrode.

5. A method of manufacturing a semiconductor device comprising the steps of:

forming a conductive film over a first semiconductor and a second semiconductor with an insulating film therebetween;

forming a rectangular shape first resist pattern on the conductive film over the first semiconductor, and forming a second resist pattern on the conductive film over the second semiconductor by using a photomask having a translucent film portion or a reticle having a translucent film portion, wherein a thickness of an edge portion of the second resist pattern is smaller than a thickness of a middle portion of the second resist pattern;

forming a rectangular shape first gate electrode over the first semiconductor by dry etching using the first resist pattern, and forming a second gate electrode by dry etching using the second resist pattern over the second semiconductor wherein a thickness of an edge portion of the second gate electrode is smaller than a thickness of a middle portion of the second gate electrode;

introducing an impurity element into the first semiconductor with the first gate electrode as a mask to form a first impurity region in the first semiconductor, wherein the first impurity region is not overlapped with the first gate electrode, and introducing the impurity element into the second semiconductor with the second gate electrode as a mask to form a second and a third impurity regions in the second semiconductor, wherein the second impurity region is not overlapped with the second gate electrode and the third

impurity region is overlapped with the edge portion of the second gate electrode.

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6. A method of manufacturing a semiconductor device comprising the steps of:

forming a conductive film over a first semiconductor and a second semiconductor with an insulating film therebetween;

forming a rectangular shape first resist pattern on the conductive film over the first semiconductor, and forming a second resist pattern on the conductive film over the second semiconductor by using a photomask having a translucent film portion or a reticle having a translucent film portion, wherein a thickness of an edge portion of the second resist pattern is smaller than a thickness of a middle portion of the second resist pattern;

forming a rectangular shape first gate electrode over the first semiconductor by dry etching using the first resist pattern, and forming a second gate electrode by dry etching using the second resist pattern over the second semiconductor, wherein a thickness of an edge portion of the second gate electrode is smaller than a thickness of a middle portion of the second gate electrode;

introducing an impurity element into the first semiconductor with the first gate electrode as a mask to form a first impurity region in the first semiconductor, wherein the first impurity region is not overlapped with the first gate electrode, and introducing the impurity element into the second semiconductor with the second gate electrode as a mask to form a second impurity region in the second semiconductor, wherein the second impurity region is not overlapped with the second gate electrode;

removing the first and the second resist patterns;

forming a third resist pattern covering the first gate electrode; and

introducing the impurity element into the first semiconductor with the third resist pattern as a mask to form a third impurity region in the first semiconductor, wherein the third impurity region is not overlapped with the third resist pattern and the first gate

electrode, and introducing the impurity element into the second semiconductor with the second gate electrode as a mask to form a fourth and a fifth impurity regions in the second semiconductor, wherein the fourth impurity region is not overlapped with the second gate electrode and the fifth impurity region is overlapped with the edge portion of the second gate electrode.

7. A method of manufacturing a semiconductor device comprising the steps of:

forming a conductive film over a semiconductor with an insulating film therebetween;

forming a resist pattern on the conductive film, wherein a thickness of an edge portion of the resist pattern is smaller than thickness of a middle portion of the resist pattern;

forming a gate electrode by a first etching using the resist pattern wherein a thickness of an edge portion of the gate electrode is smaller than a thickness of a middle portion of the gate electrode;

introducing an impurity element into the semiconductor with the gate electrode as a mask to form a first impurity region and a second impurity region in the semiconductor, wherein the first impurity region is not overlapped with the gate electrode and the second impurity region is overlapped with the edge portion of the gate electrode; and

making the edge portion of the second gate electrode recede by a second etching.

8. A method of manufacturing a semiconductor device comprising the steps of:

forming a conductive film over a first semiconductor and a second semiconductor with an insulating film therebetween;

forming a rectangular shape first resist pattern on the conductive film over the first semiconductor, and forming a second resist pattern on the conductive film over the

second semiconductor, wherein a thickness of an edge portion of the resist pattern is smaller than thickness of a middle portion of the resist pattern;

forming a rectangular shape first gate electrode over the first semiconductor by a first dry etching using the first resist pattern, and forming a second gate electrode by the first dry etching using the second resist pattern over the second semiconductor, wherein a thickness of an edge portion of the second gate electrode is smaller than a thickness of a middle portion of the second gate electrode;

introducing an impurity element into the first semiconductor with the first gate electrode as a mask to form a first impurity region in the first semiconductor, wherein the first impurity region is not overlapped with the first gate electrode, and introducing an impurity element into the second semiconductor with the second gate electrode as a mask to form a second and a third impurity regions in the second semiconductor, wherein the second impurity region is not overlapped with the second gate electrode and the third impurity region is overlapped with the edge portion of the second gate electrode; and

making the edge portion of the second gate electrode recede by a second dry etching.

9. A method of manufacturing a semiconductor device comprising the steps of:

forming a conductive film over a first semiconductor and a second semiconductor with an insulating film therebetween;

forming a first resist pattern on the conductive film over the first semiconductor and a second resist pattern on the conductive film over the second semiconductor, wherein a thickness of an edge portion of the first resist pattern and a second thickness of an edge portion of the second resist pattern are smaller than thickness of a middle portion each of the first and the second resist patterns;

forming a first gate electrode by a first dry etching using the first resist pattern,

wherein the first thickness of an edge portion of the first gate electrode is smaller than a thickness of a middle portion of the first gate electrode, and forming the second gate electrode by the first dry etching using the second resist pattern, wherein the second thickness of an edge portion of the second gate electrode is smaller than a thickness of a middle portion of the second gate electrode;

removing the first and the second resist patterns;

introducing an impurity element into the first semiconductor with the first gate electrode as a mask to form a first impurity region and a second impurity region in the first semiconductor, wherein the first impurity region is not overlapped with the first gate electrode and the second impurity region is overlapped with the edge portion of the first gate electrode, and introducing the impurity element into the second semiconductor with the second gate electrode as a mask to form a third impurity region and a fourth impurity region in the second semiconductor, wherein the third impurity region is not overlapped with the second gate electrode and the second impurity region is overlapped with the edge portion of the second gate electrode;

making the edge portions of the first and the second gate electrodes recede by a second dry etching;

forming a third resist pattern over the first gate electrode, wherein the second gate electrode is exposed from the third resist pattern; and

making the edge portion of the second gate electrode recede by a third dry etching.

10. A method of manufacturing a semiconductor device comprising the steps of:

forming a conductive film over a semiconductor with an insulating film therebetween;

forming a rectangular shape first resist pattern on the conductive film, and

forming a second resist pattern on the conductive film, wherein a thickness of an edge portion of the second resist pattern is smaller than thickness of a middle portion of the second resist pattern;

forming a rectangular shape first gate electrode by a first dry etching using the first resist pattern, and forming a second gate electrode by the first dry etching using the second resist pattern, wherein a thickness of an edge portion of the second gate electrode is smaller than a thickness of a middle portion of the second gate electrode;

removing the first and the second resist patterns;

introducing an impurity element into the semiconductor with the first gate electrode as a mask to form a first impurity region in the semiconductor, wherein the first impurity region is not overlapped with the first gate electrode, and introducing the impurity element into the semiconductor with the second gate electrode as a mask to form a second and a third impurity regions in the semiconductor, wherein the second impurity region is not overlapped with the second gate electrode and the third impurity region is overlapped with the edge portion of the second gate electrode; and

making the edge portion of the second gate electrode recede by a second dry etching.

11. The method of manufacturing a semiconductor device according to claim 1, wherein a plurality of slit portions are used as the diffraction grating pattern.

12. The method of manufacturing a semiconductor device according to claim 2, wherein a plurality of slit portions are used as the diffraction grating pattern.

13. The method of manufacturing a semiconductor device according to claim 3, wherein a plurality of slit portions are used as the diffraction grating pattern.

14. The method of manufacturing a semiconductor device according to claim 4, wherein a phase of an exposure light is shifted by one wavelength by passing through the translucent film portion, the exposure light being a single wavelength light.

15. The method of manufacturing a semiconductor device according to claim 5, wherein a phase of an exposure light is shifted by one wavelength by passing through the translucent film portion, the exposure light being a single wavelength light.

16. The method of manufacturing a semiconductor device according to claim 6, wherein a phase of an exposure light is shifted by one wavelength by passing through the translucent film portion, the exposure light being a single wavelength light.

17. The method of manufacturing a semiconductor device according to claim 9, wherein the first and the second thicknesses are the same.

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18. The method of manufacturing a semiconductor device according to claim 1, wherein the edge portion of the resist pattern has tapered configuration.

19. The method of manufacturing a semiconductor device according to claim 2, wherein the edge portion of the resist pattern has tapered configuration.

20. The method of manufacturing a semiconductor device according to claim 3, wherein the edge portion of the resist pattern has tapered configuration.

21. The method of manufacturing a semiconductor device according to claim 4,

wherein the edge portion of the resist pattern has tapered configuration.

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22. The method of manufacturing a semiconductor device according to claim 5, wherein the edge portion of the resist pattern has tapered configuration.

23. The method of manufacturing a semiconductor device according to claim 6, wherein the edge portion of the resist pattern has tapered configuration.

24. The method of manufacturing a semiconductor device according to claim 7, wherein the edge portion of the resist pattern has tapered configuration.

25. The method of manufacturing a semiconductor device according to claim 8, wherein the edge portion of the resist pattern has tapered configuration.

26. The method of manufacturing a semiconductor device according to claim 9, wherein the edge portion of the resist pattern has tapered configuration.

27. The method of manufacturing a semiconductor device according to claim 10, wherein the edge portion of the resist pattern has tapered configuration.

28. The method of manufacturing a semiconductor device according to claim 7, wherein a diffraction grating pattern having a plurality of slit portions, or a translucent film portion, is used for forming the resist pattern.

29. The method of manufacturing a semiconductor device according to claim 8, wherein a diffraction grating pattern having a plurality of slit portions, or a translucent

film portion, is used for forming the resist pattern.

30. The method of manufacturing a semiconductor device according to claim 9, wherein a diffraction grating pattern having a plurality of slit portions, or a translucent film portion, is used for forming the resist pattern.

31. The method of manufacturing a semiconductor device according to claim 10, wherein a diffraction grating pattern having a plurality of slit portions, or a translucent film portion, is used for forming the resist pattern.

32. The method of manufacturing a semiconductor device according to claim 1, wherein the semiconductor is a semiconductor layer formed on an insulating surface.

33. The method of manufacturing a semiconductor device according to claim 4, wherein the semiconductor is a semiconductor layer formed on an insulating surface.

34. The method of manufacturing a semiconductor device according to claim 7, wherein the semiconductor is a semiconductor layer formed on an insulating surface.

35. The method of manufacturing a semiconductor device according to claim 1, wherein the semiconductor is a semiconductor substrate.

36. The method of manufacturing a semiconductor device according to claim 4, wherein the semiconductor is a semiconductor substrate.

37. The method of manufacturing a semiconductor device according to claim 7,

wherein the semiconductor is a semiconductor substrate.

38. The method of manufacturing a semiconductor device according to claim 2, wherein each of the first semiconductor and the second semiconductor is a semiconductor layer formed on an insulating surface.

39. The method of manufacturing a semiconductor device according to claim 3, wherein each of the first semiconductor and the second semiconductor is a semiconductor layer formed on an insulating surface.

40. The method of manufacturing a semiconductor device according to claim 5, wherein each of the first semiconductor and the second semiconductor is a semiconductor layer formed on an insulating surface.

41. The method of manufacturing a semiconductor device according to claim 6, wherein each of the first semiconductor and the second semiconductor is a semiconductor layer formed on an insulating surface.

42. The method of manufacturing a semiconductor device according to claim 8, wherein each of the first semiconductor and the second semiconductor is a semiconductor layer formed on an insulating surface.

43. The method of manufacturing a semiconductor device according to claim 9, wherein each of the first semiconductor and the second semiconductor is a semiconductor layer formed on an insulating surface.

44. The method of manufacturing a semiconductor device according to claim 10, wherein each of the first semiconductor and the second semiconductor is a semiconductor layer formed on an insulating surface.

45. The method of manufacturing a semiconductor device according to claim 2, wherein the first and the second semiconductors are formed in a semiconductor substrate.

46. The method of manufacturing a semiconductor device according to claim 3, wherein the first and the second semiconductors are formed in a semiconductor substrate.

47. The method of manufacturing a semiconductor device according to claim 5, wherein the first and the second semiconductors are formed in a semiconductor substrate.

48. The method of manufacturing a semiconductor device according to claim 6, wherein the first and the second semiconductors are formed in a semiconductor substrate.

49. The method of manufacturing a semiconductor device according to claim 8, wherein the first and the second semiconductors are formed in a semiconductor substrate.

50. The method of manufacturing a semiconductor device according to claim 9, wherein the first and the second semiconductors are formed in a semiconductor substrate.

51. The method of manufacturing a semiconductor device according to claim 10, wherein the first and the second semiconductors are formed in a semiconductor substrate.

52. The method of manufacturing a semiconductor device according to claim 1,

wherein the etching is dry etching.

53. The method of manufacturing a semiconductor device according to claim 4, wherein the etching is dry etching.

54. The method of manufacturing a semiconductor device according to claim 7, wherein the etching is dry etching.

55. The method of manufacturing a semiconductor device according to claim 1, wherein the semiconductor device is incorporated into an electronic device selected from the group consisting of a video camera, a digital camera, a projector, a head mounted display, a car navigation system, a car stereo, a personal computer, a portable information terminal.

56. The method of manufacturing a semiconductor device according to claim 2, wherein the semiconductor device is incorporated into an electronic device selected from the group consisting of a video camera, a digital camera, a projector, a head mounted display, a car navigation system, a car stereo, a personal computer, a portable information terminal.

57. The method of manufacturing a semiconductor device according to claim 3, wherein the semiconductor device is incorporated into an electronic device selected from the group consisting of a video camera, a digital camera, a projector, a head mounted display, a car navigation system, a car stereo, a personal computer, a portable information terminal.

58. The method of manufacturing a semiconductor device according to claim 4, wherein the semiconductor device is incorporated into an electronic device selected from the group consisting of a video camera, a digital camera, a projector, a head mounted display, a car navigation system, a car stereo, a personal computer, a portable information terminal.

59. The method of manufacturing a semiconductor device according to claim 5, wherein the semiconductor device is incorporated into an electronic device selected from the group consisting of a video camera, a digital camera, a projector, a head mounted display, a car navigation system, a car stereo, a personal computer, a portable information terminal.

60. The method of manufacturing a semiconductor device according to claim 6, wherein the semiconductor device is incorporated into an electronic device selected from the group consisting of a video camera, a digital camera, a projector, a head mounted display, a car navigation system, a car stereo, a personal computer, a portable information terminal.

61. The method of manufacturing a semiconductor device according to claim 7, wherein the semiconductor device is incorporated into an electronic device selected from the group consisting of a video camera, a digital camera, a projector, a head mounted display, a car navigation system, a car stereo, a personal computer, a portable information terminal.

62. The method of manufacturing a semiconductor device according to claim 8, wherein the semiconductor device is incorporated into an electronic device selected from

the group consisting of a video camera, a digital camera, a projector, a head mounted display, a car navigation system, a car stereo, a personal computer, a portable information terminal.

63. The method of manufacturing a semiconductor device according to claim 9, wherein the semiconductor device is incorporated into an electronic device selected from the group consisting of a video camera, a digital camera, a projector, a head mounted display, a car navigation system, a car stereo, a personal computer, a portable information terminal.

64. The method of manufacturing a semiconductor device according to claim 10, wherein the semiconductor device is incorporated into an electronic device selected from the group consisting of a video camera, a digital camera, a projector, a head mounted display, a car navigation system, a car stereo, a personal computer, a portable information terminal.